

ReTain®

**PLANT GROWTH REGULATOR FOR CALIFORNIA  
SOLUBLE POWDER  
FOR USE ON APPLE, PEAR, STONE FRUIT (EXCEPT CHERRY),  
WALNUT, PISTACHIO, PECAN, ALMOND  
AND CUCUMBER (SEED PRODUCTION ONLY)**

## Active Ingredient:

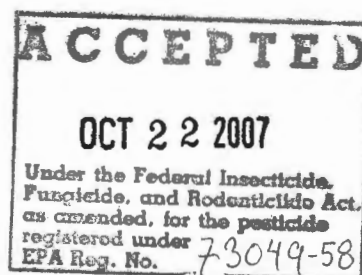
[S]-*trans*-2-Amino-4-(2-aminoethoxy)-3-butenic acid hydrochloride .....15%  
Other Ingredients .....85%  
Total .....100%

EPA Reg. No. 73049-58

EPA Est. No. 33967-NJ-1

## Registrant:

Valent BioSciences Corporation  
870 Technology Way  
Libertyville, IL 60048  
1-800-6-VALENT



Net Weight: 11.7 oz (333 grams)

One pouch will treat up to one half acre of listed nut crops at the maximum use rate.

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

FIRST AID	
<b>If inhaled</b>	--Move person to fresh air. --If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. --Call a <b>poison</b> control center or doctor for further treatment advice.
<b>If on skin or clothing</b>	--Take off contaminated clothing. --Rinse skin immediately with plenty of water for 15-20 minutes. --Call a <b>poison</b> control center or doctor for treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-892-0099 (24 hours) for emergency medical treatment and/or transport emergency information. For all other information, call 1-800-6-Valent.	

**PLEASE SEE ATTACHED APPLICATION GUIDE FOR COMPLETE PRECAUTIONARY  
STATEMENTS AND DIRECTIONS FOR USE**

## Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. Refer to Supplemental Labeling under "AGRICULTURAL USE REQUIREMENTS" in the DIRECTIONS FOR USE section for information about this standard

## APPLICATION GUIDE

**ReTain<sup>®</sup>**

**PLANT GROWTH REGULATOR FOR CALIFORNIA  
SOLUBLE POWDER  
FOR USE ON APPLE, PEAR, STONE FRUIT (EXCEPT CHERRY),  
WALNUT, PISTACHIO, PECAN, ALMOND  
AND CUCUMBER (SEED PRODUCTION ONLY)**

**Active Ingredient:**

[S]- <i>trans</i> -2-Amino-4-(2-aminoethoxy)-3-butenic acid hydrochloride .....	15%
Other Ingredients .....	85%
Total .....	100%

EPA Reg. No. 73049-58  
EPA Est. No. 33967-NJ-1

**Registrant:**  
Valent BioSciences Corporation  
870 Technology Way  
Libertyville, IL 60048  
1-800-6-VALENT

Net Weight: 11.7 oz. (333 grams)

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION**

Harmful if inhaled or absorbed through skin. Avoid breathing spray mist. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling. Remove and wash contaminated clothing before reuse.

## **Personal Protective Equipment (PPE)**

Applicators and other handlers must wear:

- Long sleeved shirt and long pants
- Shoes plus socks
- Waterproof gloves

Hand-wand applicators must wear dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C), or a NIOSH approved respirator with N,R, P or HE filter when applying this product.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

### **User Safety Recommendations**

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then, wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

## **Environmental Hazards**

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate. This product is moderately toxic to avian species and exposure to birds should be avoided.

## **DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State/Tribal agency responsible for pesticide regulation.

### **AGRICULTURAL USE REQUIREMENTS**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements in this labeling about Personal Protective Equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated such as plants, soil, or water is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

## GENERAL INFORMATION FOR USE

**IMPORTANT:** Before application, read all use directions thoroughly. Use ReTain<sup>®</sup> only as directed.

ReTain<sup>®</sup> contains 15% (wt/wt) [S]-*trans*-2-amino-4-(2-aminoethoxy)-3-butenic acid hydrochloride, commonly known as aminoethoxyvinylglycine, aviglycine HCl, or AVG. AVG is a potent plant growth regulator produced by fermentation. AVG inhibits the production of ethylene in plant tissues. Ethylene affects plant processes such as flower development, fruit set, fruit maturation, fruit ripening, and fruit abscission.

## GENERAL APPLICATION INSTRUCTIONS

- Do not apply this product through any type of irrigation system.
- ReTain<sup>®</sup> is packaged in a water-soluble bag sealed inside a metallized polyester pouch. Each water-soluble bag contains 11.7 oz (333 grams) of ReTain<sup>®</sup>. Once the outer pouch is opened, the entire water-soluble bag must be used.
- Because the proper timing of ReTain<sup>®</sup> application is particularly important to product performance, serious consideration is to be given, on a block-by-block basis, to any site conditions (e.g., elevation, sun exposure, soil texture), growing condition(s) (e.g., prevailing or anticipated weather patterns such as high temperature, drought or flood conditions, nutrient levels) or production practices (e.g., crop load, pruning severity) that could impact flowering, fruit set, or fruit maturation during the course of the season.
- Apply ReTain<sup>®</sup> in a sufficient amount of water to ensure good coverage of the tree or crop canopy. Product efficacy requires that flowers, fruits, and foliage receive thorough spray coverage. Use calibrated spray equipment to ensure uniform coverage of flowers, fruit, and foliage. Adjust water volumes based on plant size and spacing. Excessive spray application volumes that result in spray runoff will reduce product performance.
- Prepare spray solution by mixing the required amount of product with water in a clean, empty spray tank. Dispose of any unused spray material at the end of each day.
- Avoid applications during the heat of the day. For best results, apply ReTain<sup>®</sup> under slow drying conditions, e.g. early in the morning or at night, in order to maximize absorption.
- Maintain solution pH between 6 and 8.
- Do not apply ReTain<sup>®</sup> to plants or fruit under stress (e.g. heat, water, disease, insect). Injured or stressed plants or fruits may not respond to ReTain<sup>®</sup>.
- Do not use overhead cooling or irrigation equipment for at least 8 hours following

ReTain<sup>®</sup> application.

- Do not apply ReTain<sup>®</sup> if rain is expected within 8 hours of application.

#### **COMPATIBILITY WITH OTHER AGRICULTURAL PRODUCTS**

ReTain<sup>®</sup> can be tank-mixed with DiPel<sup>®</sup>, Biobit<sup>®</sup>, and Xentari<sup>®</sup> biological insecticides. Compatibility and performance data for ReTain<sup>®</sup> with other agricultural products are not available.

## APPLE AND PEAR

CROP	OBJECTIVE / BENEFIT:	APPLICATION TIMING/ USE INSTRUCTIONS
Apple	<p>Depending on cultivar, orchard conditions, application timing, and grower objectives, one or more of the following benefits will be associated with ReTain<sup>®</sup></p> <ul style="list-style-type: none"> <li>• delayed fruit maturity</li> <li>• improved harvest management</li> <li>• reduced preharvest fruit drop</li> <li>• additional time for increase in fruit size</li> <li>• additional time for color development</li> <li>• maintenance of fruit firmness</li> <li>• improved fruit quality (e.g., reduced incidence and/or severity of watercore and stem bowl cracking)</li> <li>• enhanced storage potential</li> </ul> <p>Consult your local Valent USA Agricultural Specialist (1-800-6-Valent) for specific information on the best use practices for your particular orchard(s).</p>	<p><b>Single Pick Harvest:</b> Apply one pouch of ReTain<sup>®</sup> per acre four weeks prior to the anticipated <i>beginning of the normal harvest period of untreated fruit</i> for the current season. ReTain<sup>®</sup> applied four weeks before harvest will delay the harvest period up to 7 to 10 days. Applications made either too early or too late will significantly reduce the efficacy of the product for one or more of the possible benefits.</p>
		<p><b>Multiple Pick Harvest:</b> To improve the fruit quality and storage potential of later picked apples (2nd, 3rd, 4th picks) apply one pouch of ReTain<sup>®</sup> per acre, one to two weeks prior to the anticipated <i>beginning of the normal harvest period of untreated fruit</i> for the current season. ReTain<sup>®</sup> applied one to two weeks before harvest typically will not delay the start of the harvest (1st pick), but will help control the maturation rate of the later picks.</p>
Pear	<p>ReTain<sup>®</sup> will offer one or more of the same benefits as listed for apples, depending on the cultivar, growing conditions, and grower objectives. Consult your local Valent USA Agricultural Specialist (1-800-6-Valent) for specific information on the best use practices for your particular orchard(s).</p>	<p>Apply one pouch of ReTain<sup>®</sup> per acre one to two weeks prior to the anticipated <i>beginning of the normal harvest period of untreated fruit</i> for the current season.</p>
<p><b>Water Volume:</b> ReTain<sup>®</sup> efficacy requires that fruit and foliage receive thorough spray coverage. To ensure thorough coverage adjust water volumes based on tree size and spacing and use calibrated spray equipment (i.e. orchard air blast sprayer). Excessive spray application volumes that result in spray runoff will reduce product performance. In most cases, 100 gallons per acre has been shown to be effective.</p>		
<p><b>Adjuvants:</b> For optimal response, use ReTain<sup>®</sup> with Break-Thru<sup>®</sup>, RNA Si 100, Silwet L-77<sup>®</sup>, or Sylgard<sup>®</sup> 309 organosilicone surfactant. Use a final surfactant concentration of 0.05 to 0.1% (v/v) in the spray tank. To prevent possible spotting, use the 0.05% (v/v) concentration when high temperature (in excess of 86°F) weather conditions prevail or are anticipated. Do not use a surfactant concentration greater than 0.1% (v/v). To reduce foaming, add the adjuvant last and minimize agitation.</p>		

**Harvest:** The normal harvest period for a particular orchard block refers to that time when fruits not treated with ReTain<sup>®</sup> would be harvested for long term storage. To help determine the *beginning of the normal harvest period*, refer to historical trends for harvest dates and the "days from full bloom to harvest" interval for each cultivar in your area.

**Additional Notes:**

- ReTain<sup>®</sup> is to be applied only after fruit set has occurred.
- Combination effects and potential interactions between ReTain<sup>®</sup> and naphthaleneacetic acid (NAA) or ethephon products have not been thoroughly evaluated. Use of these products on ReTain<sup>®</sup>-treated apple and pear trees can partially negate the benefits of ReTain<sup>®</sup>.
- If using reflective films or foil mulch, apply ReTain<sup>®</sup> first and then lay down the reflective film or foil mulch under the ReTain<sup>®</sup>-treated apple trees.
- ReTain<sup>®</sup> has a 7 day preharvest interval (PHI) for Apple and Pear.

• **STONE FRUIT (EXCEPT CHERRY)**

CROP	OBJECTIVE / BENEFIT	APPLICATION TIMING/ USE INSTRUCTIONS
<b>Peach</b> <b>Nectarine</b>	<p>Depending on cultivar, orchard conditions, and grower objectives, one or more of the following benefits will be associated with ReTain<sup>®</sup>:</p> <ul style="list-style-type: none"> <li>• improved harvest management</li> <li>• additional time for increase in fruit size</li> <li>• maintenance of fruit firmness</li> <li>• reduced preharvest fruit drop</li> <li>• improved fruit quality</li> <li>• enhanced storage potential.</li> </ul> <p>Consult your local Valent USA Agricultural Specialist (1-800-6-Valent) for additional specific information.</p>	<p>Apply one pouch of ReTain<sup>®</sup> per acre one to two weeks prior to the anticipated <i>beginning of the normal harvest period of untreated fruit</i> for the current season.</p>
<b>Plum</b> <b>Prune</b> <b>Apricot</b>	<p>ReTain<sup>®</sup> will offer one or more of the same benefits as listed for peach and nectarine, depending on the cultivar, growing conditions, and grower objectives. For these crops and interspecific variations of these crops, such as Plumcot, Pluot<sup>®</sup>, &amp; Aprium<sup>®</sup>, consult your local Valent USA Agricultural Specialist (1-800-6-Valent) for additional specific information.</p>	<p>Apply one pouch of ReTain<sup>®</sup> per acre one to two weeks prior to the anticipated <i>beginning of the normal harvest period of untreated fruit</i> for the current season.</p>
<p><b>Water Volume:</b> ReTain<sup>®</sup> efficacy requires that fruit and foliage receive thorough spray coverage. To ensure thorough coverage adjust water volumes based on tree size and spacing and use calibrated spray equipment (i.e. orchard air blast sprayer). Excessive spray application volumes that result in spray runoff will reduce product performance. In most cases, 100 gallons per acre has been shown to be effective.</p>		
<p><b>Use of Adjuvants:</b> If improved wetting and coverage of stone fruit (except cherry) is desired, use an organosilicone adjuvant such as Break-Thru<sup>®</sup>, Silwet L-77<sup>®</sup>, or Sylgard<sup>®</sup> 309 at a final surfactant concentration in the spray tank of up to 0.1% v/v. Do not use a concentration higher than 0.1% v/v. If a non-organosilicone adjuvant is preferred, use Regulaid<sup>®</sup> or NuFilm-P<sup>®</sup> at the rates indicated on the manufacturers' label. To reduce foaming, add the adjuvant last and minimize agitation.</p>		
<p><b>Harvest:</b> The normal harvest period for a particular orchard block refers to that time when fruits not treated with ReTain<sup>®</sup> would be harvested. To help determine the beginning of the normal harvest period, refer to historical trends for harvest dates and the "days from full bloom to harvest" interval for each cultivar in your area, and closely monitor the fruit maturity development for the current season.</p>		

**Additional Notes:**

- ReTain<sup>®</sup> is to be applied only after fruit set has occurred.
- ReTain<sup>®</sup> has a 7 day preharvest interval (PHI) for Stone Fruit (except cherry).

## NUT CROPS

CROP	OBJECTIVE / BENEFIT	APPLICATION TIMING/ USE INSTRUCTIONS
<b>Walnut</b>	Increased nut set in cultivars affected by pistillate flower abortion (PFA). Consult your local walnut tree specialist or Valent USA Agricultural Specialist (1-800-6-Valent) for more information.	Apply one to two pouches* of ReTain <sup>®</sup> per acre, as a single application, to trees when most pistillate flowers are receptive to pollination. In most cases, ReTain <sup>®</sup> applications at 5 to 30 percent pistillate flower bloom have been shown to be effective. Applications made either too early (pre-bloom) or too late (full bloom or later) will significantly reduce efficacy of the treatment.
<b>Almond</b>	To increase nut set in cultivars that experience low set in some years. Consult your local almond tree specialist or Valent USA Agricultural Specialist (1-800-6-Valent) for more information.	Apply one to two pouches* of ReTain <sup>®</sup> per acre, as a single application during bloom time. Applications made either too early (pre-bloom) or too late (after full bloom) will reduce the efficacy of the treatment.
<b>Pecan</b>	To increase nut set in cultivars that experience low set in some years. Consult your local pecan tree specialist or Valent USA Agricultural Specialist (1-800-6-Valent) for more information.	Apply one to two pouches* of ReTain <sup>®</sup> per acre, as a single application during bloom time. Applications made either too early (pre-bloom) or too late (after full bloom) will reduce the efficacy of the treatment.
<b>Pistachio</b>	To increase nut set in cultivars that experience low set in some years. Consult your local pistachio tree specialist or Valent USA Agricultural Specialist (1-800-6-Valent) for more information.	Apply one to two pouches* of ReTain <sup>®</sup> per acre, as a single application during bloom time. Applications made either too early (pre-bloom) or too late (after full bloom) will reduce the efficacy of the treatment.
<b>Water Volume:</b> ReTain <sup>®</sup> efficacy requires that flower buds and flowers receive thorough spray coverage. To ensure thorough coverage use calibrated spray equipment (i.e. air blast sprayer) and adjust water volumes based on tree size and spacing. Use sufficient water volume to achieve good coverage without excessive runoff. In most cases, 100 to 200 gallons spray volume per acre has been shown to be effective.		
<b>Use of Adjuvants:</b> Use of adjuvants with ReTain <sup>®</sup> for bloom applications has not been fully researched. Some adjuvants will cause a bloom thinning effect and will reduce the benefits of ReTain <sup>®</sup> .		
<b>*Rate:</b> Use higher rates on cultivars/orchards that have experienced high incidences of poor nut set.		

## CUCUMBER (SEED PRODUCTION ONLY)

### CUCUMBER (FOR GYNOECIOUS INBRED SEED PRODUCTION OR HYBRID SEED PRODUCTION WITH GYNOECIOUS POLLINATOR)

CROP	OBJECTIVE / BENEFIT	APPLICATION TIMING/ USE INSTRUCTIONS
<b>Cucumber</b> ( <i>Cucumis sativus</i> ) Gynoecious inbred breeding lines.	Promotion of staminate (male) flowers in gynoecious (female flowering) cucumber-breeding lines for the purpose of producing inbred and hybrid cucumber seed.	Apply ReTain <sup>®</sup> directly to gynoecious plants to be converted. Make one to four applications of 250 ppm to 500 ppm active ingredient (a.i.) beginning at early first leaf stage through tenth leaf stage. Use the appropriate skip row technique to achieve desired sex ratio of plants.
<b>Water Volume:</b> Apply ReTain in a sufficient amount of water to ensure good coverage. In most cases, 27 to 54 gallons per treated acre will be sufficient. One 11.7 oz. (333 g) pouch of ReTain in 27 gallons of spray solution will provide 500 ppm a.i. One 11.7 oz. (333 g) pouch of ReTain in 54 gallons of spray solution will provide 250 ppm a.i. The application rate and frequency of application will depend on the sensitivity of the individual inbred line to ReTain. Transient leaf yellowing will occur at high rates. If unacceptable leaf yellowing is noted, use lower concentrations in subsequent applications.		
<b>Use of Adjuvants:</b> Use of an adjuvant is not optimal. Addition of an adjuvant to ReTain increases the likelihood of leaf yellowing in young cucumber plants.		
<b>Note:</b> Do not reapply ReTain within 24-hours of application. Do not apply more than two pouches of ReTain (23.4 oz or 666 g product) per acre per season. Use of ReTain on cucumber is for gynoecious breeding line and hybrid seed production only. Do not apply directly to, or allow spray to drift to cucumber crops grown for fresh or processed markets. Fruit from plants treated with ReTain is not to be used for human or animal consumption. Consult your local vegetable specialist or Valent USA Agricultural Specialist (1-800-6-VALENT) for more information.		

## STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

**Pesticide Storage:** Store product in a cool and dry place. Avoid extended storage conditions at temperatures above 25°C (77°F).

**Pesticide Disposal:** Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.

**Container Disposal:** Dispose of empty outer foil bag in trash.

## NOTICE TO USER

### Warranty and Disclaimer Statement:

To the fullest extent permitted by law, seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning the use of this product other than as indicated on the label. To the fullest extent permitted by law, user assumes all risks of use, storage or handling not in strict accordance with accompanying directions.

Break-Thru<sup>®</sup> is a registered trademark of Goldschmidt Chemical Corporation  
RNA Si 100 is a product of RNA Corporation.

Silwet L-77<sup>®</sup> is a registered trademark of Momentive Performance Materials

Sylgard<sup>®</sup> 309 is a registered trademark of Dow Corning Corporation.

Biobit<sup>®</sup>, DiPel<sup>®</sup> and XenTari<sup>®</sup> are registered trademarks of Valent BioSciences Corporation.

NuFilm-P<sup>®</sup> is a registered trademark of Miller Chemical and Fertilizer Corporation.

Regulaid<sup>®</sup> is a registered trademark of KALO, Inc.

Aprium<sup>®</sup> and Pluot<sup>®</sup> are registered trademarks of Zaiger Genetics.